Fol. Tony Gallegos
From: Neil A. Simmons

5/015/072
UTU-73 779

WESTERN CLAY COMPANY
INDUSTRIAL/AGRICULTURAL MINERALS

AKA. M/015/072

Mr. Dennis J Willis
US Dept. Of the Interior
Bureau of Land Management
Moab District
125 South 600 West
PO BOX 7004
Price, Ut. 84501

September, 6 1996

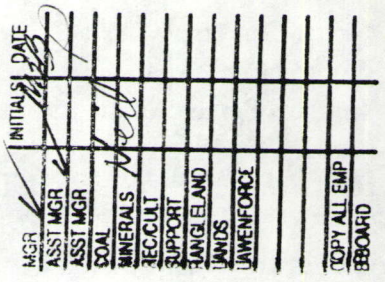
Dear Mr. Willis:

We have received your letter dated August 21, 1996 in which you pointed out some additional information and error corrections required on the plan of operations we submitted (see enclosed letter). Thank you for your help. The following is a list of corrections we have made to that plan:

1. We are herewith submitting a revised plan that addresses only the Hebe #1,2,4,5, & 8 mining claims. See enclosed plan of operations.

2. Garrick and associates are the mining claimants on the involved claims. Garrick & Associates are:

Neal J. Mortensen
Fred D. Mortensen
Garin Madsen
Alex Boyter
Jeff McClellan
Wallace Curtis
Brad Boyter
Eldred Garrick



3. Our revised plan of operations includes a more exact description of the location of proposed activity.

4. Operations Development Schedule:
Total number of acres disturbed: 81.77
Number of years for the mine: 44.00

5. Reclamation Schedule:
Area's A,C, & D will be reclaimed when they are mined out. There is currently no plan to mine area F. The only disturbances planned for area F are approximately twelve exploratory drill holes. If these holes indicate a mineral that can be sold in new markets or is better suited for our existing markets, only then will mining be conducted on area F. The drill holes will be

reclaimed immediately after drilling and any tire tracks made by the drill truck will be reclaimed as well. All drill holes will be flagged and tire tracks will be laid down so that endangered species will be avoided. Area D will be mined exclusively until market pressures demand moving on to area F which surface samples indicate contains a different concentration of trace metals. Area E is an access road to area F and will be reclaimed when activities on area F are completed.

6. The estimated yearly production rate is a minimum of: 35,000 tons. If known markets are capitalized upon yearly production of 500,000 tons is expected. Please note that as production increases the road and road surface will be improved to handle this traffic.

At 500,000 tons per year it will take 44 years to extract all the gypsum in this area.

Total amount of resource expected to mined under this plan: between 2,000,000 and 18,000,000 tons.

7. Number of personnel needed to run the mine:

Mine workers:
- 4 operators
- 1 quality control supervisor
- 1 water truck driver

Truck Drivers: 6

Contractors: 2

Support Personnel in Aurora: 15-20

8. Size and number of trucks to be used:

6- 32 ton trucks

Number of trips these trucks will make on a daily basis: 4

Number of trucks and frequency of trips will increase as tonnage increases. The trucks used will be the most economical companies, drivers, and equipment that can be located.

9. Period of operation:

Mining will be conducted at various times and last approximately three weeks. At the end of these three weeks a large stockpile will remain. This stockpile will then be hauled away over the next four months. When the stockpile is depleted mining will start again.

10. If overburden and topsoil piles remain in place for more than a year they will be seeded. Overburden piles will contain some gypsum which should allow them to crust when wetted. This crusting will help prevent dust lost.

11. Names and addresses of cultural and plant inventory contractors:

Contractor for Soil, Vegetation, and Threatened-Endangered Species inventory:

Environmental Industrial Services
4855 N. Spring Glenn Rd
Spring Glenn, Ut 84256
801-472-3814

Contractor for Cultural inventory:

Senco-Phenix
PO BOX 187
Mt Pleasant, Ut. 84647
John A Senulis
801-462-0291

See enclosed reports.

12. See enclosed map for areas where stockpiles will be located.

13. All access roads will be built in accordance with BLM Class II road standards and will be improved, subject to approval, as production increases.

14. Erosion control measures are shown in the boulder fill and culvert on the enclosed map. Upon reclamation a hard floor will exist at the bottom of the pit area. Small hills and valleys will be constructed to restore natural drainage and appearances. The floor of the pit will gently slope to the south to facilitate drainage, erosion should not be a problem.

The road between area E and area F will cross the dam on its southeast end near the hill staying above the level of the dam. Western clay will keep the road above the level of the resivior in case the dam is ever rebuilt. The gypsum bed extends under the floor of the resiviour. If the BLM and stockmen desire Western clay will mine this gypsum to create a water storage for livestock.

On cross section A-A a 42 foot long 42 inch in diameter pipe will be installed (see enclosed support for 42 inch culvert). In putting down the culvert some material will be pushed downstream and out of our mining area in order to prevent an impondment of water. At the end of the culvert we will place nonsoluable boulders to slow the flow of water and to prevent erosion.

15. When possible trucking will be scheduled when there is natural moisture on the road. Dust control on access roads will be handled by a Water truck. In dust prone areas of the road gravel will be laid down.

16. Approximately 4,000 Gallons of water each 2 ½ hours can be applied as needed. This water will be obtained from three main sources:

1. Lone tree crossing of the Muddy river.
2. Hauled from the Sevier Valley.
3. Hauled from Huntington by Nielsen Construction.

17. Gypsum is exposed and visible on the proposed mine area and beds can be viewed in washes. Western Clay has also studied the geology of the area. Outcrop material has been tested and found to be high purity. Therefore we do not believe an extensive drilling plan is necessary on any area except F.

18. The gypsum will be used for several purposes. Known and expected markets include agricultural gypsum and as an additive to white plaster. Other markets will be explored and developed. The gypsum will be processed at Western Clay's plant in Aurora Ut. Processing will include fine grinding and packaging for distribution. The plant and it's personnel have extensive experience in processing of gypsum.

19. Area D and Area F are on different beds of mineral. The bed exposed on area F is lower than that exposed on area D. This lower bed is slightly off color while the upper bed is whiter. The lower bed is flatter and more uniform which would make mining easier. Purity on the two beds is similar, however the trace amounts of metals in the two beds differ significantly. Most notable is that the lower bed has a lower concentration of Fluorine and Zinc. As one of our competitors is currently mining on this lower bed of gypsum it may become necessary to move to area F to compete. It is possible that markets will develop which would require mining of area D for one application and area F for another application.

20. See enclosed plan, & map.

21. The only hazardous materials used in the mining operation would be the fuel and oil used in the mining equipment. These materials will be properly handled and disposed of. Used oil will be taken to our recycling container at the plant in Aurora. A 500 gallon portable fuel tank will be located at the mine near the site of the portable restroom.

22. Portable toilets will be located near the existing pit. See enclosed map.

23. Equipment and fuel tanks will be stored near the portable toilets. See enclosed map.

24. Any spills of petroleum products and or toxic substances will be cleaned up and contaminated soil taken to the East Carbon landfill where they have facilities to handle such materials. A trash barrel will be located near the portable toilets and a frequent inspection of the disturbed area for the purpose of housekeeping will be conducted. This trash barrel will be emptied at the Sevier County Landfill.

25. The upper bed of gypsum is approximately 10 feet thick. The lower bed varies from 12 to 17 feet in thickness. Area D is on the upper bed, as is area A. Area F is on the lower bed.

26. The route to be used by the haul trucks will be the Freemont Junction Interchange. Eventually this route may be changed to the Ivie Creek-Muddy Creek Interchange. The haul distance to our Aurora plant is 60 miles on both routes, however the Ivie route has fewer miles of off-highway travel and would therefore be more economical for truck haulage.

27. The blasting agent used to blast the boulder fill will be AmFO-Ammonium Nitrate and Fuel Oil, or Prell as it is commonly known.

28. Mining in all pits will be similar.

[redacted] [redacted]

ut-060-38092-2
(August 1988)

(For BLM Use) Serial No._____

PLAN OF OPERATIONS
(For Operations Proposed Under the 43 CFR 3809 Regulations)

Operator Information:

name	Address	telephone
WESTERN CLAY CO	PO BOX 127 AURORA, UT 84620	801-529-3281

Claimant Information

name	Address	telephone
Garrick & Associates	PO Box 570233, Sigurd, Ut 84657	801-896-1963
Associates:		
Neal J. Mortensen	405 S Main Central Valley, Ut.	801-896-6927
Fred D. Mortensen	420 S 100 W Salina, Ut 84654	801-529-3272
Garin Madsen	439 E 100 N Richfield UT 84701	801-896-6367
Alex Boyter	PO Box 570057 Sigurd, Ut 84657	801-896-6139
Jeff McClellan	246 N 400 W Richfield, Ut 84701	979-5799
Wallace Curtis	42 W Center Freemont, Ut 84747	979-5700
Eldred Garrick	5465 Fairoaks Dr. SLC Ut 84117	801-277-2282
Brad Boyter	PO Box 570233 Sigurd, Ut 84657	801-896-1963

Claim Information (Claim names, circle claim types (Load, Placer, Mill Site, Tunnel)), BLM Serial Number

Hebe 1,2,4,5 Placer Claims BLM Serial UMC#350456-460
Hebe 8 Placer Claim BLM Serial UMC#359461-465

Location of Proposed Activity

Hebe #1 S ½ of the S ½ of the SW 1/4 Sec 24 T24S R7E SLM
Hebe #2 N ½ of the NW 1/4 Sec 24 T 24S R7E SLM
Hebe #4 N ½ of the E ½ of the E ½ Sec 23T24SR7ESLM
Hebe #5 N ½ of the W ½ of the E ½ Sec23T24SR7ESLM
Hebe #8 N ½ of the E ½ of the W ½ Sec23T24SR7ESLM

The area of operations includes an existing pit area labeled area A on the enclosed map. This pit was created under a notice of operations. See map for acreage.

Describe existing disturbance and structures

Existing disturbance on Hebe 8: At the northwest end of the present mining operation there is a disturbed area where equipment was parked and turned around. This area was previously

disturbed by campers.

There are four wheeler tracks on the claim that were made by Western Clay and in the majority by re-creators who ride in this area.

Attachment #2

Proposed Operations

The gypsum which we wish to mine is covered with a thin layer of criptogamic soil which will be skimmed off and stored on the disturbed area. Overburden is for the most part only a few inches thick and will also be stored on the disturbed area. The above work will be completed utilizing a front end loader with some aid from a dozer. A backhoe without teeth will be used to remove overburden from gullies or depressed areas in the gypsum. A bobcat and a self propelled sweeper that retains its sweepings may also be used to gather criptogamic soil.

The actual mining will be don with a 650 type reclaimer as made by CMI Corporation of Oklahoma City. These machines make little dust. If dust becomes a problem they are equipped with a mist spray that can be utilized. The gypsum will be excavated in approximately six inch top size pieces. The reclaimer leaves the gypsum in a windrow where it will be gathered by a front end loader and stockpiled or loaded on a truck. The mining will be done in approximately 12 inch lifts. As one portion of the pit area is mined out the overburden, criptogamic soils, and perhaps some gypsum may be moved to the mined out area. For this reason it is impossible to show the exact location of stockpiles on the map.

A truck mounted with a five inch auger drill will be used to bore shallow test holes in the pit area. The holes will be refilled with cuttings.

Drainage which operations disturb will be fashioned to a natural appearance. Criptogamic soil will be reapplied after mining.

The access road to the mine is covered under the BLM Right of Way Serial #UTU-73237.

There will be some drilling and blasting with explosives to provide material for the fill in cross section A-A on the enclosed map. Although our current plan is to conduct all mining with a profiler type mining machine drilling and blasting may be utilized as a mining method if this method will produce less dust. If it is deemed necessary by the BLM hydrologist to conduct a keyway in the boulder fill shown in cross section A-A drilling and blasting will be required. If this keyway is necessary the size and location of the keyway will be constructed to satisfy the BLM hydrologist.

Drilling & Blasting as a mining method: These operations will include the drilling of holes in the gypsum bed. The holes will be spaced approximately five feet apart. These holes will be drilled to a depth that will minimize the blast disturbance. Blasting will be conducted using dynamite and "Prell", ammonium nitrate and diesel fuel. Prell will be used sparingly so as to avoid the scattering of materials. The vast majority of primers will be of the non-electric variety. Blasting will be performed with adherence to proper safety measures. The blasting will be performed by western clay employees with ten years of experience blasting gypsum.

The following equipment may be used in the mining on this deposit:

Backhoe, Trackhoe, Front End Loader, Bulldozer, Water Truck, Road Grader, Pickup Trucks, Diesel Tractors with belly dump or end dump style trailers, Drill Truck, Portable crushing and screening equipment, Portable toilets, Portable fuel tank.

Criptogamic soil and overburden, mostly blow sand, will be piled separately on disturbed areas. These materials will probably be moved periodically so as to enable the operator to mine gypsum underneath the stockpile. Once an area has been mined out the overburden will be placed over the disturbed area. Drainage will be reestablished to resemble natural drainage. Topsoil and criptogamic soil will also be reapplied. The reclaimed areas will be seeded. A seedbed will be prepared on reclaimed areas and proper seeds will be planted according to procedures acceptable to the BLM.

A map is enclosed showing the proposed areas and acreage of disturbances to be created by this mine.

No drill holes will be made deeper than 25 feet. These drill holes will come nowhere near the watertable. Holes will be made for testing of known bed, not exploration. Therefore, after mining no the holes will no longer exist.

On area F mining will take place first on one side of the dike and then on the other. While mining is being conducted on one side the other side will be used to stockpile material.

Period of Operation From 1996 to 2040

Proposed Reclamation

When an area has been mined out there will be a pit are remaining with a depth of approximately 12 feet. For reclamation material from the bottom of the pit may be needed to create the sloped sides as required by the BLM and DOGM. Overburden that has been stored will be placed on the disturbed area. The criptogamic soil will then be distributed over the surface. Seeds will be planted as required by the BLM.

Drainage will be restored to a functional and natural appearing state.

I will complete all necessary reclamation of areas disturbed during the course of my operations to the standards described in 43 CFR3809.1-3(d) and that reasonable measures will be taken to prevent unnecessary or undue degradation of the federal lands during operations.

Signature Fred D. Mortensen
Fred D. Mortensen, President
Western Clay Company

[redacted] PM PRIC[redacted]RS OFFICE FAX NO. [redacted]

3809-060-3809-2
(August 1988)

RECEIVED
GRAND JUNCTION DISTRICT
RESOURCE AREAS

88 SEP -9 AM 9:0[illegible]

(For BLM Use) Serial No. _____

NOTICE
OR
PLAN OF OPERATIONS

(For Operations Proposed Under the 43 CFR 3809 Regulations)

Instructions: Circle "Notice" (above) if proposed mining activity within the project area will disturb a total of five (5) acres or less during the calendar year. Circle "Plan of Operations" if disturbance will exceed five acres during the calendar year or if operations are within one of the specially designated areas described in 43 CFR 3809.1-4(b). Complete the form in as much detail as possible. Additional sheets may be used if necessary. Use maps or sketches where appropriate. A review of the 43 CFR 3809 regulations should be conducted prior to completion of this form.

Operator Information:

Name	Address	Telephone
WESTERN CLAY CO.	PO BOX 127 AURORA, UT 84620	801-529-[illegible]

Claimant Information (If different than operator):

Name	Address	Telephone
GARRICK & ASSOCIATES See also attachment A	PO BOX 570233 SIGURD, UT 84657	801-896-[illegible]

Claim Information (Claim names, circle claim types (Lode, (Placer) Mill Site, Tunnel), BLM Serial No.):

HEBE#1245 PLACER CLAIMS. BLM SERIAL UMC#350456-460

HEBE #8 PLACER CLAIM BLM SERIAL UMC#359461-465

Location of Proposed Activity (i.e. Township, Range, Section):

See attachment A.

Describe Existing Disturbance and Structures or Indicate on Maps or Sketches (Mine and Mill Facilities, roads, drillings, dump areas, etc. It may be to your advantage to document existing disturbance with photographs.):

See Attachment #1

Proposed Operations: Describe the entire proposed operation, including all surface disturbing activities (road construction, drilling, trenching, backhoe and bulldozer exploration, mining, waste disposal, etc.) List all mechanized earth-moving equipment to be used during the operation and state if explosives are to be utilized. Describe and furnish a map or sketch, when applicable, showing the locations and size of areas where surface disturbances are proposed, including existing and/or proposed routes of access. Calculate the total acreage proposed for disturbance (1 acre = 43,560 sq. ft.)

SEE ATTACHMENT # 2

[redacted] PRICE HD[redacted]PRICE FAX NO. [redacted]

Period of Operation: From 1996 To 2040

Proposed Reclamation: Describe the proposed reclamation procedures and other measures to be taken to prevent unnecessary or undue degradation of the lands, including measures to be taken if a period of nonoperation is anticipated.

SEE ATTACHMENT #3

will complete all necessary reclamation of areas disturbed during the course of my operations to the standards described in 43 CFR 3809.1-3(d) and that reasonable measures will be taken to prevent unnecessary or undue degradation of the federal lands during operations.

Signature of Operator: Fred D. Mortensen Date 8-14-96

NOTICE TO OPERATORS:

A notice submitted in relation to the 43 CFR 3809 regulations does not require approval from the BLM. However notification of such activities shall be made at least 15 calendar days before commencing operations. Receipt of a notice will be acknowledged promptly. Approval of a submitted plan of operations is required from the BLM prior to commencing operations. The BLM will promptly acknowledge receipt of a submitted plan and will notify the operator of the status of the plan within 30 days of receipt of the plan.

Submittal of a notice or approval of a plan of operations does not constitute certification of ownership to any person named as owner herein, nor does it constitute recognition of the validity of any mining claims named herein.

Generally, information that could be considered proprietary is not necessary to fulfill notice or plan of operations requirements. However, information and data submitted and specifically identified by the operator as containing trade secrets or confidential or privileged commercial or financial information should be attached to a separate page and cited in the text of the notice or plan of operations. This information will be filed separately and will not be available for public inspection.

Failure of operator to file a notice or a plan of operations, as required by the 43 CFR 3809 regulations, may subject the operator to being served a notice of noncompliance or enjoined from the continuation of such operations by a court order until such time as a notice or plan is filed with the BLM.

The completed notice or plan of operations should be filed with the appropriate resource area office. The addresses are as follows:

San Rafael & Price River Resource Areas
~~300 North 700 East~~ P.O. Box 7004
Price, Utah 84501 125 South 600 West

Grand Resource Area
P. O. Box M
Moab, Utah 84532

San Juan Resource Area
435 North Main Street
Monticello, Utah [redacted]

Attachment A

Operator Information:

Western Clay Company
PO Box 127
Aurora, Ut 84620
801-529-3281

Claimant Information:

Garrick & Associates	PO Box 570233, Sigurd, Ut 84657 801-896-1963
Associates:	
Neal J. Mortensen	405 S Main Central Valley, Ut. 801-896-6927
Fred D. Mortensen	420 S 100 W Salina, Ut 84654 801-529-3272
Garin Madsen	439 E 100 N Richfield UT 84701 801-896-6367
Alex Boyter	PO Box 570057 Sigurd, Ut 84657 801-896-6139
Jeff McClellan	246 N 400 W Richfield, Ut 84701 979-5799
Wallace Curtis	42 W Center Freemont, Ut 84747 979-5700
Eldred Garrick	5465 Fairoaks Dr. SLC Ut 84117 801-277-2282
Brad Boyter	PO Box 570233 Sigurd, Ut 84657 801-896-1963

Claim Information:

Hebe #1,2,4,& 5	BLM Serial Number UMC#350456-460
Hebe # 8	BLM Serial Number UMC#359461-465

Location of Proposed Activity:

Hebe #1 S ½ of the S ½ of the SW 1/4 Sec 24 T24S R7E SLM
Hebe #2 N ½ of the NW 1/4 Sec 24 T 24S R7E SLM
Hebe #4 N ½ of the E ½ of the E ½ Sec 23T24SR7ESLM
Hebe #5 N ½ of the W ½ of the E ½ Sec23T24SR7ESLM
Hebe #8 N ½ of the E ½ of the W ½ Sec23T24SR7ESLM

The area of operations includes an existing pit area labeled area A on the enclosed map. This pit was created under a notice of operations. See map for acreage.

ATTACHMENT #1
DESCRIPTION OF EXISTING DISTURBANCE

Existing disturbance on Hebe Claim #8:
At the Northwest end of the present mining operation there is a disturbed area where equipment was parked and turned around. This area was previously used by campers.

Second disturbance:
There are four wheeler tracks on the claims that were made by Western Clay and in the majority by recreators who ride in this area.

Attachment #2

Proposed Operations

The gypsum which we wish to mine is covered with a thin layer of criptogamic soil which will be skimmed off and stored on the disturbed area. Overburden is for the most part only a few inches thick and will also be stored on the disturbed area. The above work will be completed utilizing a front end loader with some aid from a dozer. A backhoe without teeth will be used to remove overburden from gullies or depressed areas in the gypsum. A bobcat and a self propelled sweeper that retains its sweepings may also be used to gather criptogamic soil.

The actual mining will be don with a 650 type reclaimer as made by CMI Corporation of Oklahoma City. These machines make little dust. If dust becomes a problem they are equipped with a mist spray that can be utilized. The gypsum will be excavated in approximately six inch top size pieces. The reclaimer leaves the gypsum in a windrow where it will be gathered by a front end loader and stockpiled or loaded on a truck. The mining will be done in approximately 12 inch lifts. As one portion of the pit area is mined out the overburden, criptogamic soils, and perhaps some gypsum may be moved to the mined out area. For this reason it is impossible to show the exact location of stockpiles on the map.

A truck mounted with a five inch auger drill will be used to bore shallow test holes in the pit area. The holes will be refilled with cuttings.

Drainage which operations disturb will be fashioned to a natural appearance. Criptogamic soil will be reapplied after mining.

The access road to the mine is covered under the BLM Right of Way Serial #UTU-73237.

There will be some drilling and blasting with explosives to provide material for the fill in cross section A-A on the enclosed map. Although our current plan is to conduct all mining with a profiler type mining machine drilling and blasting may be utilized as a mining method if this method will produce less dust. If it is deemed necessary by the BLM hydrologist to conduct a keyway in the boulder fill shown in cross section A-A drilling and blasting will be required. If this keyway is necessary the size and location of the keyway will be constructed to satisfy the BLM hydrologist.

Drilling & Blasting as a mining method: These operations will include the drilling of holes in the gypsum bed. The holes will be spaced approximately five feet apart. These holes will be drilled to a depth that will minimize the blast disturbance. Blasting will be conducted using dynamite and "Prell", ammonium nitrate and diesel fuel. Prell will be used sparingly so as to avoid the scattering of materials. The vast majority of primers will be of the non-electric variety. Blasting will be performed with adherence to proper safety measures. The blasting will be performed by western clay employees with ten years of experience blasting gypsum.

The following equipment may be used in the mining on this deposit:

Backhoe, Trackhoe, Front End Loader, Bulldozer, Water Truck, Road Grader, Pickup Trucks, Diesel Tractors with belly dump or end dump style trailers, Drill Truck, Portable crushing and screening equipment, Portable toilets, Portable fuel tank.

Criptogamic soil and overburden, mostly blow sand, will be piled separately on disturbed areas. These materials will probably be moved periodically so as to enable the operator to mine gypsum underneath the stockpile. Once an area has been mined out the overburden will be placed over the disturbed area. Drainage will be reestablished to resemble natural drainage. Topsoil and criptogamic soil will also be reapplied. The reclaimed areas will be seeded. A seedbed will be prepared on reclaimed areas and proper seeds will be planted according to procedures acceptable to the BLM.

A map is enclosed showing the proposed areas and acreage of disturbances to be created by this mine.

No drill holes will be made deeper than 25 feet. These drill holes will come nowhere near the watertable. Holes will be made for testing of known bed, not exploration. Therefore, after mining no the holes will no longer exist.

On area F mining will take place first on one side of the dike and then on the other. While mining is being conducted on one side the other side will be used to stockpile material.

ATTACHMENT #3
PROPOSED RECLAMATION

When an area has been mined out there will be a pit area remanining with a depth of approxiamately 12 feet. For reclamation material from the bottom of the pit may be needed to create the sloped sides as required by the BLM or DOGM. Overburden that has been been stored will be placed on the disturbed area. The criptogamic soil will then be distributed over the surface. Seeds will be planted as required by the BLM.
Drainages will be restored to a functional and natural apearing state.

ENVIRONMENTAL INDUSTRIAL SERVICES
4855 N. Spring Glen Rd., Helper, UT 84526 · Telephone (801) 472-3814 · FAX (801) 472-8780

FAX MESSAGE

DATE: 9/4/96

NUMBER OF PAGES INCLUDING COVER SHEET: 7

TO: Western Clay Co.

ATTN: Fred or Vern

FROM: David Steed

COMMENTS: Here is a draft copy of our Veg/Soils/T+E Report. Still waiting on a production figure and soil results. Can I get you have questions

DRAFT

HEBE'S MOUNTAIN PROJECT EXPANSION - WESTERN CLAY COMPANY
VEGETATION, SOILS AND THREATENED AND ENDANGERED SPECIES INVENTORY

CONDUCTED BY EIS
AUGUST 27-28, 1996

INTRODUCTION

Western Clay Company is currently planning to expand it's gypsum mining operation on public land. The existing operation, located at T. 24 S., R. 7 E. Section 23, would encompass an additional 80 acres over five adjoining parcels within Sections 23 and 24. In order to facilitate this mine expansion, a vegetation and soils inventory of the expansion area, as directed by the Utah Division of Oil, Gas and Mining (DOGM), is to be conducted. Also, due to the known presence of Wright fish hook cactus (Sclerocactus wrightiae), within the general area, the Bureau of Land Management (BLM) requires that a threatened and endangered species inventory be conducted as well.

In August of 1996, EIS was contracted to complete the vegetation, soils, and threatened and endangered species inventory required for the expansion area. The following report describes the general methodology followed during the inventory, as well as the findings and conclusions generated.

METHODOLOGY

The on-site evaluation of the proposed areas of disturbance was conducted on August 27-28, 1996. The inventory area, located within the southwestern end of the San Rafael Swell, is characterized by low precipitation, high temperature, and a sparse salt desert shrub habitat. Numerous small ephemeral runoff channels and ravines criss-cross the area. Gypsum is readily accessible throughout most of the area, where large concentrations have been exposed through weathering and/or by expansion. Extensive concentrations of cryptobiotic soils are found where gypsum is exposed or near to the surface. Exhibit 1 is a view characteristic of the area inventoried.

Originally, six areas totalling approximately 80 acres were identified as part of the inventory. Upon arrival at the site, Area A (4.74 Acres) was eliminated from the study and boundaries of Area B and Area D expanded to make up the difference. A range site evaluation was selected for description of the five proposed areas of disturbance (Areas B, C, D, E, and access road).

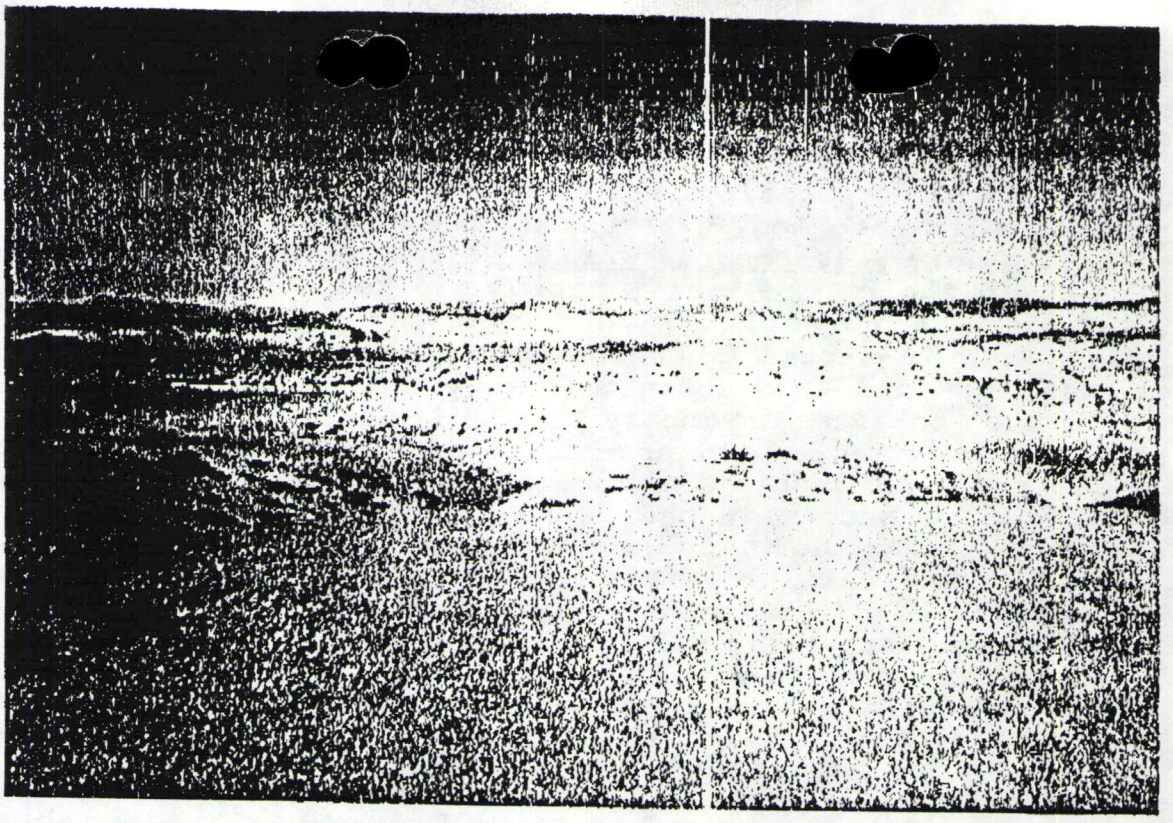


EXHIBIT 1

CHARACTERISTIC VIEW OF EXPANSION AREA

During a phone conversation with Lynn Kunzler of the DOGM, it was determined that a ground cover percentage and complete species list would be required for each vegetation type to be disturbed. During the on-site evaluation of the areas, only one major vegetation type; salt desert shrub, was determined. Vegetation was sampled using the line intercept point method, with points taken at uniform intervals (overy two feet) along a 100 foot transect. Points were classified as bare, litter, rock, grass, forb, or shrub. Vegetation sampled along each transect was identified and included within the complete species list. A total of 53 transects were randomly located within a study area that incorporated the sites of disturbance as well as the immediate undisturbed surroundings.

A productivity estimate and woody plant density determination was conducted to evaluate the potential of post-mining reclamation. George Cook, Range Specialist for the Natural Resource Conservation Service (NRCS) was contacted for a productivity estimate. Due to the sparse cover present within the site, woody plant density was calculated using the belt transect method. Every shrub within a 10 by 100 foot (1000 square feet) area was counted on every other transect located during cover sampling (27 total).

A threatened and endangered species plant inventory was conducted in unison with the vegetation inventory. During a meeting with Wayne Luddington, BLM Biologist for Price River/San Rafael Resource Area, it was determined that a thorough walk over of the proposed

areas of disturba[redacted]would be required due to [redacted]known presence of the endangered Sclerocactus wrightiae, as well as the potential for other threatened species. During vegetation sampling and species identification, the areas of proposed disturbance were continuously evaluated for the potential of all such species. The boundaries of each area were inventoried, with the entire area of each traversed diagonally. Where Sclerocactus wrightiae was identified, flagging was placed and their immediate location plotted on a map.

Soils data was requested by the DOGM to evaluate the need for topsoil salvage and the potential of post-mining reclamation. Prior to the on-site inventory, Leland Sasser, a NRCS Soil Scientist, was contacted to determine what soils may be present within the area. Though soils mapping within the area is in the process of being prepared, the presence of Mussentuchit-Goblin-Robroost Complex was identified as potentially occurring within the site. During the on-site survey, seven sites indicative of the area of proposed disturbance were identified for sampling. Localized areas where soils were deposited by wind, and therefore, much deeper, were avoided since they were not representative of the entire area. Sample sites were selected based on uniqueness (i.e. color, depths to gypsum, and location). Soil was collected using a three by six inch core auger, with a composite sample taken to the contact with the gypsum layer.

RESULTS

Twenty-five species were identified as occurring within the five areas. These species are shown in TABLE I. The 53 random transects inventoried within the site yielded 2,650 points. Of these points, 85.81 percent were bare, 6.72 were litter and 0.75 percent were rock. Vegetation made up 6.72 percent of the cover, with 0.75 percent as grasses, 0.08 percent as forbs, and 5.89 percent as shrubs. Percent composition by plant species is shown in TABLE 2.

Productivity was estimated by the NRCS as ****.

The 27 shrub density belt transects sampled approximately 0.62 acres and yielding 1,841 shrubs of nine different species. Using the calculation methodology for belt transects described in the DOGM vegetation guidelines, shrub density approximates 2,970 shrubs per acre. Shrubs were dominated by small (< 4 inches) Atriplex corrugata, which made up 83.11 percent of the shrubs counted. Table 3 shows the number and percentage of each shrub species sampled during the density inventory, as well as a calculated number of the species sampled per acre.

TABLE 1

PLANT SPECIES IDENTIFIED WITHIN THE AREAS OF THE PROPOSED DISTURBANCE

SCIENTIFIC NAME	COMMON NAME
Artemisia nova	dwarf sagebrush
Atriplex canescens	four-wing saltbush
Atriplex confertifolia	shadscale
Atriplex corrugata	mat saltbush
Brassica spp.	mustard
Chrysothamnus nauseosus	rubber rabbitbrush
Cryptantha flava	golden cryptantha
Distichlis spicata	desert saltgrass
Ephedra torreyanna	Torrey joint-fir
Eriogonum inflatum	desert trumpet
Eriogonum spp.	buckwheat
Eurotia lanata	winter fat
Gutierrezia sarothrae	broom snakeweed
Halogeton glomeratus	halogeton
Hilaria jamesii	galleta
Kochia americana	green molly
Mentzilia pumila	stickleaf blazing-star
Opuntia spp.	prickly-pear
Oryzopsis hymenoides	Indian ricegras
Rhus aromatic var. trilobata	skunkbush
Salsola iberica	Russian thistle
Sclerocactus wrightiae	Wright fishhook cactus
Sphaeralcea parvifolia	small flowered globemallow
Stanleya pinnata	princesplume
Tamarix pentandra	tamarisk

TABLE 2

PERCENT OF COVER COMPOSITION BY SPECIES

COVER	SPECIES	COVER (%)
Grasses	Oryzopsis hymenoides	0.49
	Hilaria jamesii	0.26
Forbs	Brassica Spp.	0.08
Shrubs	Atriplex corrugata	2.60
	Chrysothamnus nauseosus	1.47
	Ephedra torreyanna	1.25
	Atriplex confertifolia	0.42
	Kochia americana	0.08
	Eurotia lanata	0.04
	Sclerocactus wrightiae	0.04

TABLE 3

SHRUB DENSITY

SPECIES	NUMBER	PERCENTAGE	CALCULATED (ACRE)
Atriplex corrugata	1,530	83.11	2,468
Atriplex confertifolia	115	6.25	186
Chrysothamnus nauseosus	85	4.62	136
Ephedra torreyanna	75	4.07	121
Kochia americana	28	1.52	45
Eurotia lanata	3	0.16	5
Sclerocactus wrightiae	3	0.16	5
Sphaeralcea parvifolia	1	0.05	2
Artemisia nova	1	0.05	2

Thirty-three Sclerocactus wrightiae, in groups of one to five, were identified at 15 different locations within the expansion areas (See Map). Location of the cactus were generally near or associated with an ephemeral gully. No other threatened, endangered, or sensitive species was identified within the area.

Where soil was sampled, depths were generally shallow (< 8 inches). Gypsum was exposed, or near to the surface over the majority of the study area. Most of the composite samples taken contain precipitated gypsum within the top eight inches. An exception to this is where wind blown material has been deposited on sideslopes or where material has been deposited during ephemeral flows in drainages and gullies. Soils in these areas were up to 48 inches deep and composed mostly of sand. Samples taken were provided to Intermountain Laboratory in Farmington, New Mexico for analysis. Results of analysis performed will be provided as soon as they are made available.

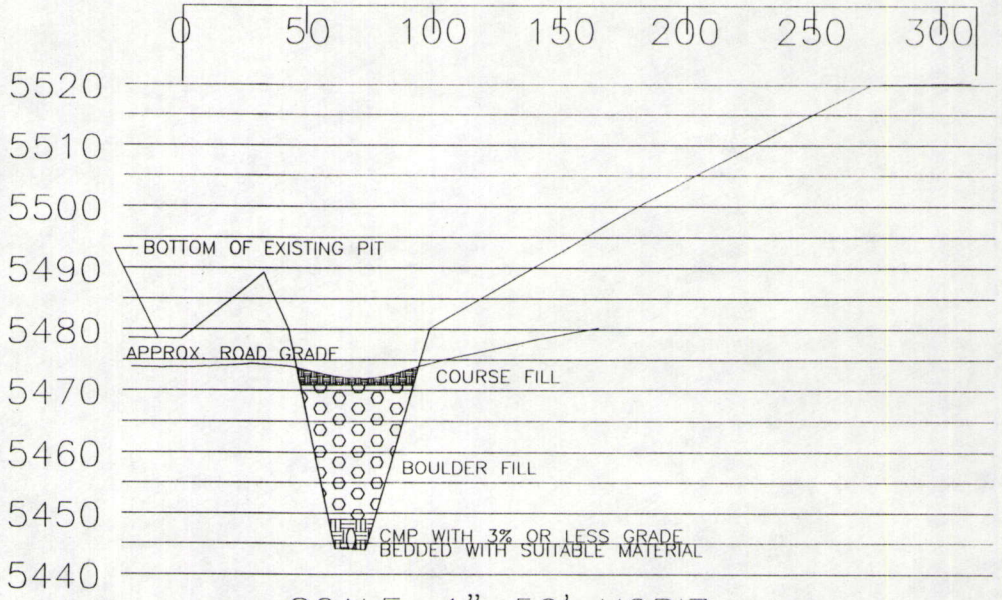
CONCLUSIONS

From the data generated during the inventories conducted, it is the conclusion of EIS that vegetation is limited within the area by extreme climate, low precipitation and poor soil substrate. The area is extremely sparse and supports little species diversity or productivity. Shrub density, though appearing significant, consists mostly of mats of Atriplex corrugata that are less than four inches high. Many of the shrubs present are associated with the ephemeral gullies and washes and considered as untypical of the majority of the site. As shown in Exhibit 1, the area is composed mostly of bare ground covered by extensive cryptobiotic development. Though considered a sensitive soil by the BLM, its presence within the site is not considered a limiting factor by that office.

The presence of Sclerocactus wrightiae within the site, however, is a recognizable concern. Though the site is not considered the sole endemic source of this species, it is considered significant due to the endangered status of the plant. Potential mitigation of this issue may be addressed by transplanting to an identified undisturbed area, donation of the plants to a educational

institution, or alteration of the expansion area boundaries to exclude disturbance. Review of this matter is currently being conducted by the BLM, Price River/San Rafael Resource Area.

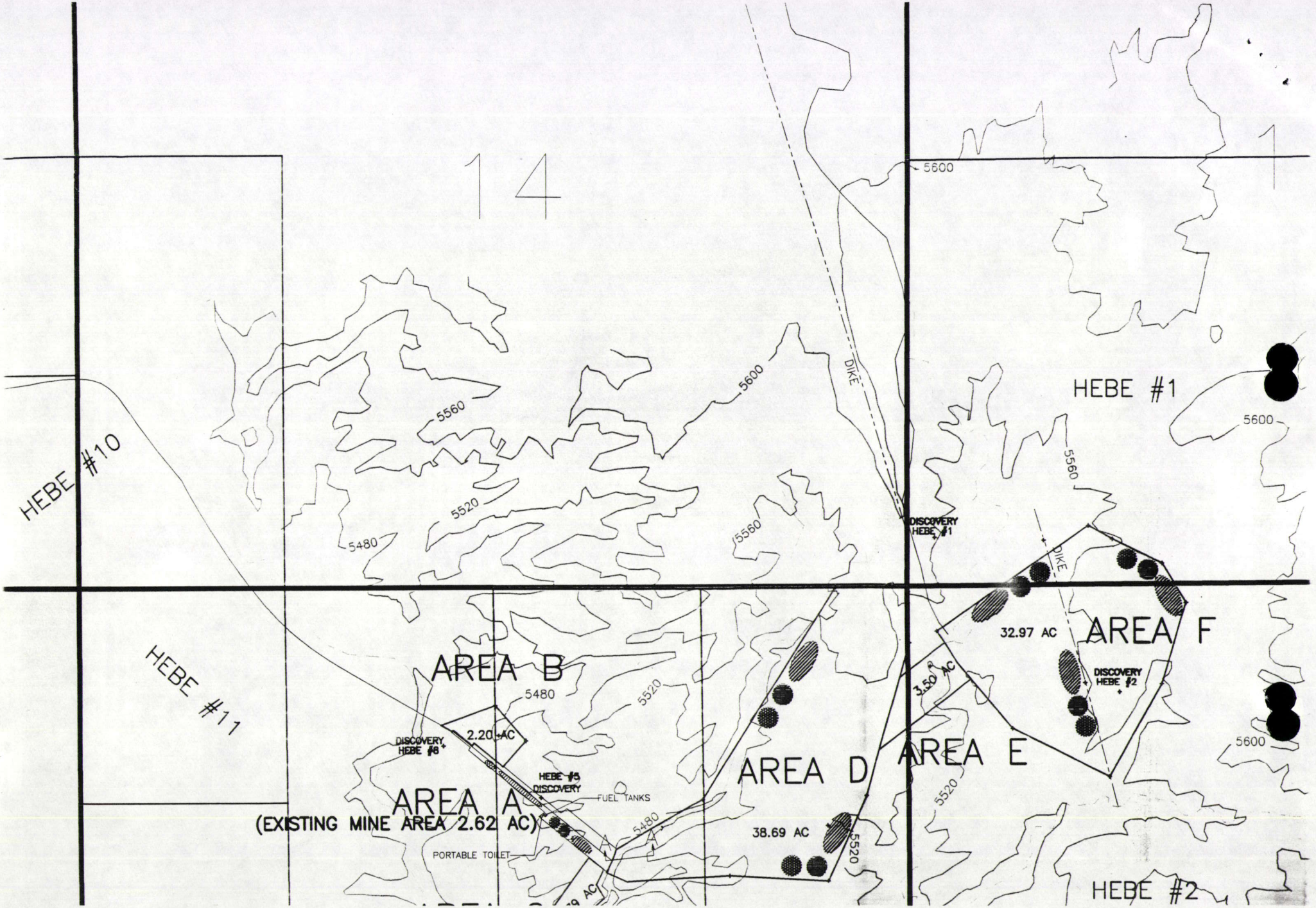
X–SEC A–A'



SCALE: 1"=50' HORIZ.
1"=20' VERT.

LEGEND

- FUTURE CRYPTOGAMIC SOIL STORAGE
- FUTURE TOPSOIL STORAGE
- FUTURE OVERBURDEN STORAGE
- PRESENT CRYPTOGAMIC SOIL STORAGE
- PRESENT OVERBURDEN STORAGE


14
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HEBE #11
HEBE #1
HEBE #2
5600
5560
5520
5480
DIKE
DISCOVERY HEBE #1
DISCOVERY HEBE #2
DISCOVERY HEBE #3
AREA A
(EXISTING MINE AREA 2.62 AC)
AREA B
AREA D
AREA E
AREA F
2.20 AC
38.69 AC
32.97 AC
3.50 AC
HEBE #5 DISCOVERY
FUEL TANKS
PORTABLE TOILET